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NEW SPECIES AND SUBSPECIES AND ADDITIONAL RECORDS OF NORTH AMERICAN ANTHIDIINAE

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In the present paper a few forms believed to be new are described, and some old forms are listed and discussed.

Anthidium rodecki, new species

Male.—Black, conspicuously ornamented with massive pale yellow bands.

Head much broader than long. Eyes, very slightly converging below, of a light yellowish-green traversed vein-like by irregular thin lines of still lighter yellow, giving a slightly mottled effect; frequently a patch of deeper color near the top of the eye. The mandibles except for the teeth, the entire clypeus except for a narrow edging of black to reddish brown along the apex, the sides of the face completely to the level of the base of the antennae, frequently a narrow, more or less interrupted, transverse band contiguous to the clypeal maculation in the supraclypeal area, a broad stripe from base to apex on the scape in front, and a conspicuous band (straight posteriorly but of undulating outline anteriorly) extending from slightly above the apex of one eye across the vertex to slightly above the apex of the other eye and broadest just above the middle ocellus—all pale yellow. The hair silvery gray to white, longest on the clypeus, on the lateral brushes of the scape, and on the vertex. The mandibles tridentate: the outermost tooth long, conspicuous, and finger-like, the intermediate tooth small and short, the innermost tooth short but broad. The apical margin of the clypeus rather straight, barely or not at all impressed toward the middle. The punctation of the clypeus and sides of the face dense but relatively fine, that on the front usually more or less concealed by the hair, that in the black space between the lateral ocelli and the eye relatively fine and rather distinct when compared with that of species like *tenuiflorae*, *emarginatum*, *mormonum*, etc.

The thorax with the following pale yellow maculations: tubercles, tegulae except for the large brown pupil, usually L-shaped marks bordering the sides and anterior margin of the mesonotum, the arms of the L being subequal in length but of unequal thickness, the anterior arm being more massive than the lateral one and surviving even when the lateral arm is missing, the axillae and scutellum except for a subtriangular area of black on the scutellum that drives a broad wedge into what would otherwise be a continuous maculation. The mesonotum and mesopleura densely but not especially coarsely punctured, the scutellum with less crowded punctures. The propodeum tessellate, with a broad transverse band of superimposed, very shallow and faint punctures along the base and with a similar punctate-tessellate area to each side of the rather funnel-shaped hairless area at the middle. The hair of the thorax silvery gray to white and rather long.

The legs with pale yellow maculations on the following parts: well-developed stripes on the under side of the front and middle femora, the hind femora with only an abbreviated stripe or wholly without a stripe, the entire outer surface of all of the tibiae, the tibial spurs of the middle and hind legs, the outer and inner surface of the basitarsi, with splashes of pale yellow also on the adjacent tarsal joints of the middle and hind legs. The tarsal joints otherwise reddish brown. The claws light ferruginous on their basal half, of a dark but still transparent red on their apical half, deeply cleft, but the inner element somewhat shorter than the outer. The hair silvery white to white except for pale golden hairs on the under side of the front basitarsi; there are reddish spines arranged in a comb at the apex of the hind basitarsi and at the apex of the subsequent tarsal joints.

The wings rather clear, the marginal cell with a faint brownish stain in its anterior half. The venation fuscous with a tendency to become more reddish brown as the tegulae are approached.

The abdomen with very broad, conspicuous, pale yellow bands: that on tergite 1 occupies all of the dorsal surface except the apical rim and a narrow median interruption; those on tergite 2–5 extend uninterruptedly across the tergite and are without emargination except for a small V-shaped area above at their middle. The band on these four tergites is of slightly increasing breadth from tergite to tergite and is bounded apically by the depressed, dark to sometimes reddish rims, and basally by a subequal area of black. Tergite 6 is wholly yellow except for a narrow black basal area, the abbreviated apical rim, and reddish transparent tip and outer lateral border of the lateral spines; the pygidium is yellow except for a narrow border of black laterally and apically on the lateral lobes and except for the black tip of the median spine. The lateral lobes are short and broad, barely or not at all extending beyond the median spine, and slightly rounded to subtruncate at the apex. The width of each lobe at the apex is about twice the distance separating the inner margin of the lobe from the median spine. The punctation of the tergites is fine and sparse, particularly so at the base of the several tergites; on the apical rims the punctation tends to arrange itself more or less in chainlike groupings and, while the punctures within each chain sometimes crowd like beads, a distance equivalent to one or more punctures usually separates one chain from another. The hair of the abdomen is silvery gray to whitish, abundant and long on tergite 1 and on the venter, sparser on the other tergites, absent from the rims.

Apical segments in all cases curved under the abdomen, but average length probably 10 mm. to 12 mm.; width of thorax 4 mm. to 4½ mm.; length of fore wing, including tegula, 7 mm. to 8 mm.

FEMALE.—Maculated very much like the male on the thorax, legs, and abdomen, but the head devoid of maculation except for a stripe extending from the summit of the eye to just above the nearest ocellus. The mandibles of the usually multidentate type; the apex of the clypeus without rugosities; a vague carina bisecting the densely punctate clypeus longitudinally. The hair of the head gray; the clypeus hairless (possibly due to wear) except on its lower lateral edges.

The L-shaped thoracic stripes discontinuous (probably, as in the male, a variable ornamentation); the other thoracic maculations, color of hair, and sculpturing as described for the male.

The yellow area covering the outer surface of the tibiae terminates just before the apex of the joint. A dense patch of snow-white hairs conceals the external surface of the front and middle basitarsi, but on the basitarsi of the hind legs the hairs are thinner and this surface reveals itself as maculated with yellow nearly to the tip. The front and middle femora have a stripe on the under side but not the hind femora (probably as in the male a variable maculation). The hair silvery white to white except for the rich reddish-golden to copper-brown hairs on the under side of the tarsal joints.

The pale yellow or cream-colored stripes on tergites 1–5 as described for the male. Tergite 6 yellow, except for invasions of darker color on each side at the base. An obtuse angle or shoulder at each side of the apex of tergite 6 interrupts an otherwise curvilinear contour. The rim of this tergite distinct although not as long as the rim of the previous tergites. Ventral scopa silvery white.

In its maculations, in the coloration of its eyes, and to a large extent also in its punctation the male of the present species closely resembles the male of *Anthidium rohweri* Schwarz, but the structure of the pygidium and of the last ventral segment are wholly different from the corresponding parts of *rohweri*. Even the maculations do not show complete accord. Thus in *rodecki* the band on the vertex is broadest at its middle, in *rohweri* distinctly narrowed at the middle; the heavy maculation that covers most of the axillae and scutellum is definitely divided into two halves by the median emargination in *rodecki*, whereas in *rohweri* the somewhat smaller maculation is uninterrupted. The bands on the abdominal tergites of *rodecki* are not quite so broad as the especially wide bands on the tergites of *rohweri*, but the V-shaped emarginations above on the middle of these bands cut deeper into these bands in *rohweri* than they do in *rodecki*, sometimes even completely dividing them. The bands are deep yellow in *rohweri*, pale yellow in *rodecki*.

The superficial resemblance of the male of *rodecki* to the male of *edwardsii* Cresson is likewise rather close. Again, however, the structure of the pygidium and of the last visible ventral segment of *rodecki* bear no resemblance to the corresponding parts in *edwardsii*. The presence of merely a small maculation above each eye in *edwardsii* instead of a band across the vertex as in the male of *rodecki*, the deeper yellow and somewhat greater breadth of the bands on the abdominal tergites of *edwardsii*, and the ferruginous pygidium of this species contrasted with the pale yellow pygidium of *rodecki*, all contribute to make the distinction between the two species clear-cut.

The above descriptions are based on a series from Roggen, Colorado. Six of the specimens (all males) were taken at the locality by H. G. Rodeck, July 17, 1930, and a seventh (likewise a male) by the same collector on July 26, 1930. Seven additional specimens—six of them

males and only one a female—with date of July 8, 1933, bear on the label three names: M. and H. James, Louise Ireland.

Anthidium mormonum hicksi, new subspecies

Differs from typical *mormonum* and other subspecies of *mormonum* in having rather close to the inner margin of each compound eye, and on a level only slightly below the anterior ocellus, a rounded yellow spot of variable size. In addition, the band behind the ocelli is continuous in two of the three specimens on which this description is based and is virtually continuous in the third.

Of a total of five females collected in their immature stages at Pasadena, California, and reared to maturity by Dr. Charles H. Hicks, in whose honor the subspecies is named, three share the unusual maculation indicated. Each of these females bears a separate field number and belonged to an individual nest, although the collecting site—to be described at some future time by Dr. Hicks—was the same for all five.

A male with a field number identical with that of one of the female paratypes of *hicksi* lacks the characters that distinguish the female.

Of the two females that do not conform to the above description one has a character unusual in *Anthidium*, being more characteristic of *Heteranthidium* and *Hypanthidium;* namely, the presence of two short, narrow, longitudinal, and virtually parallel stripes near the middle of the mesonotum (see reference to a specimen of *Paranthidium jugatorium* subspecies *lepidum* commented on elsewhere in this paper). A male of identical field number which accompanies this aberrant female of *Anthidium mormonum* is not characterized by this exceptional maculation.

Dianthidium parvum heteropoda, new subspecies

FEMALE.—Like typical *parvum* but the flagellum largely red, the legs red except for the mostly black front femora, slightly clouded hind femora, and the usual yellow spots at the base of the tibiae, and invasions of red at the apex of abdominal tergite 1. The rims of the other abdominal tergites brownish.

One female collected in Boulder County, Colorado, by Charles H. Hicks, April 5, 1925.

This insect represents a departure from typical *parvum* very similar to that of *Dianthidium ulkei cooleyi* from typical *Dianthidium ulkei*. In both cases there is a tendency to approach the condition of *Dianthidium sayi* in respect to the maculation of the legs and of the tergites of the abdomen. I was at first tempted to believe that the specimen above described might indeed be no other than *Dianthidium ulkei cooleyi*, but the different structure of the mandibles, with the subapical tooth absent, the virtually immaculate clypeus, with merely a specklike trace

of yellow in its lower lateral corners, the reduction of the yellow stripes on the tibiae to basal spots, and the absence of maculations on the front and on the mesopleura—all seem to proclaim affiliation with *parvum* rather than with *ulkei.*

Dianthidium parvum baculifrons Cockerell

This race of *parvum* was described by Professor Cockerell on the basis of a single female from Soboba Springs, Riverside Co., California (1924, Proc. Calif. Acad. of Sciences, XIV, p. 365). Five females and six males collected on June 27, 1931, by Professor H. A. Scullen, some at ten miles east of Santa Fe, New Mexico, at an elevation of 7250 feet, and some at fifteen miles east of Santa Fe, at an elevation of 7100 feet, seem to be assignable to *baculifrons;* and two specimens collected likewise on June 27, 1931, by Mr. Don Prentiss, thirty-five miles east of Santa Fe, at an elevation of 6900 feet, have been similarly designated. The females have light yellow facemarks, including the lower lateral corners of the clypeus, as well as a short yellow bar below the middle ocellus, a continuous semicircular band rimming the axillae and scutellum, a large, pale yellow patch at the base of the third tibiae, and an entirely black sixth tergite—all of these characters being specified in the description of *baculifrons.* The front and middle tibiae of the present specimens have a well-developed stripe, that on the middle tibiae extending to, or almost to, the apex of the joint; and in several specimens the front femora (in one instance also the middle femora) are striped beneath. In typical *parvum* the maculations of the tibiae are confined to the base of the joint and the femora are immaculate.

Only in one or two instances have the associated males even a faint trace of maculation in front of the middle ocellus; the semicircle of yellow rimming their scutellum posteriorly sometimes extends to their axillae, sometimes not; all of them have stripes on the under side of the front femora and one or two of them have such stripes also on the middle femora; the tibial stripes run the full length of the joint, the stripes on the hind tibiae being invaded anteriorly near their middle by an area of black; the sixth tergite is sometimes maculated but not always. On the whole these males seem difficult to separate from the male of typical *parvum.*

Both sexes of *baculifrons,* if these insects be *baculifrons,* are less ornamented than is *parvum swenki.*

Paranthidium jugatorium (Say)

A female from Glenwood Park, Minnesota, collected Aug. 18, is identical in size and closely parallels in its maculations the specimen of *jugatorium* that was recorded from Palisades, New Jersey (1926, Amer. Mus. Novitates, Oct. 9, No. 226, pp. 23–24). Both of these specimens are smaller than those of the subspecies *lepidum*.

Paranthidium jugatorium subspecies **lepidum** (Cresson)

A female from Alexandria, Arlington County, Virginia, collected by C. E. Mickel, Sept. 9, 1928, agrees with what I designated as the allotype of *lepidum* (1926, Amer. Mus. Novitates, Oct. 9, No. 226, pp. 22–23), except that the lateral marks on the clypeus are not united below, and there is no yellow stripe beneath the rather obsolete anterior ocellus.

A female from Lake Toxaway, North Carolina (collection of Mrs. A. T. Slosson), rather closely parallels the maculations of the allotype but is distinctive in having two narrow elongate stripes that run nearly the length of the mesonotum and that are slightly outcurved, diverging from each other continuously almost from their base. The male of *lepidum* on which Cresson's description was based is rather similarly ornamented.

I think these variations are probably individual and not of subspecific significance, although more extensive material is needed before one can speak with certainty. Broadly considered at least, the subspecies *lepidum* is known from the following states: Georgia, Tennessee, North Carolina, and Virginia.